

The claimed invention is:

1. In an automatic packaging machine, a mandrel comprising a support plate having at least four oppositely disposed and vertically aligned elongated tracks, a finger mounted to travel on each of said tracks of said support plate, a cam follower means for traveling in a cam track extending along a conveyor in said automatic packaging means, said cam track having contours which guide and direct said cam follower as a function of an instantaneous position of said mandrel as it travels along said conveyor, means responsive to said cam follower for moving said fingers on said tracks, and spring means for pulling said fingers to grip an object between said fingers, said contours opening said grip and said spring means closing said grip.
2. The mandrel of claim 1 wherein said fingers may grip said object at any position along the length of said elongated tracks responsive to the spring means being enabled by said cam follower traveling in said cam track.
3. The mandrel of claim 1 wherein said object is a box and each of said fingers has a circumferential groove located to grip and squeeze opposite edges of a blank for forming said box, said blank expanding to form an oddly non-parallelepiped shaped box responsive to said squeeze.
4. The mandrel of claim 3 where said oddly shaped box is a barrel-shaped box.
5. The mandrel of claim 1 and a freely turning pulley wheel mounted on said mandrel, said spring means being a coiled spring stretched over said pulley wheel

responsive to said travel of said spring follower, and means responsive to the tension of said spring stretched over said pulley wheel for closing said grip.

6. An automatic packaging machine comprising a conveyor for moving a plurality of object carrying mandrels around a closed path, a cam track accompanying 5 said path, said cam track having contours which define functional locations along said path, each of said mandrels having a plurality of movable fingers which may move variable distances together or apart in order to grip or release any of a plurality of objects having a variety of suitable widths, means responsive to contours of said cam track for releasing said grip, and spring means for applying said grip, whereby objects of 10 different widths may be carried by said mandrels without requiring a readjustment of said machine.

7. The automatic machine of claim 6, and at least one work station located along said conveyor, and means for momentarily releasing and reapplying said grip in at least one of said locations, whereby a function may be performed on said object at said 15 one location without interference resulting from said grip on said object.

8. The automatic machine of claim 7 and means for weighing said object while said grip is released and before it is reapplied, whereby a net weight of a product associated with said object may be confirmed for each object that is carried through said machine by said mandrel.

20 9. The automatic machine of claim 6 wherein said object is a box, and means for forming said fingers to open and form a box having a shape other than a parallelepiped.

10. The automatic machine of claim 6 wherein said mandrel comprises a support plate having at least four oppositely disposed vertically aligned elongated slots in which said fingers may move, means comprising a spring for pulling said fingers toward a center of said support plate in order to grip a product, and means responsive to said cam follower for moving said fingers away from the center of said support plate to release said grip in response to said contours of said cam track.

11. An automatic packaging machine comprising a pair of conveyor chains forming a closed path through said machine, a cam track extending between said conveyor chains and along said closed path, said cam track having contours which define work station locations on said path through said machine, a cam follower for following said cam track, a plurality of mandrels carried by said pair of conveyor chains and controlled by said cam follower, each of said mandrels having a plurality of replaceable fingers for gripping and releasing an object, means comprising a spring for pulling said fingers to grip said object, and means responsive to said cam follower and contours of said cam track for enabling said spring means to apply said grip and for overcoming said spring means for opening said fingers and releasing said grip on said object.

12. The machine of claim 11 wherein each of said fingers has a circumferential groove for supporting a blank for a non-parallelepiped box, and means responsive to said spring means pulling said fingers for opening said non-parallelepiped box.

13. The machine of claim 11 further comprising a support having a plurality of threaded holes defining the locations of said fingers, said fingers being replaced by unscrewing one set of fingers and screwing in another set of fingers.
14. An automatic package machine comprising a plurality of mandrels, each of
- 5 said mandrels comprising at least four finger means which move together and apart within a range to grip and release objects having individual widths which may vary between wide and narrow configurations, at least one conveyor means having a plurality of support platforms attached thereto at periodic locations along the length thereof, means associated with said support platforms for moving said mandrels
- 10 between a position where said grip is applied and a position where said release is applied as said conveyor moves said support platforms along a predetermined path, spring biased control means for moving said finger means to said grip position regardless of said individual width of said object, said contours enabling a change in width of a spacing between said fingers as said conveyor moves along said
- 15 predetermined path, a cam slot extending along said predetermined path, finger width control means comprising said cam slot having contours providing said control, a cam follower mounted on said mandrel to follow said cam slot, means responsive to a movement of said cam follower in said cam slot contours for moving said fingers apart to increase the width between said fingers in order to release an object or to enable said
- 20 spring means for moving said fingers together to grip said object, said cam follower being mounted on the bottom of an individually associated rotary vertical shaft, a pair of lever arms coupled to said rotary shaft and extending from said coupling to said lever

arms to an associated pair of said finger members, means responsive to a movement of said cam follower and to a resulting rotation of said shaft for pulling or pushing said lever arms and moving said finger members together or apart, spring means for controlling the position of said finger members to apply said grip when enabled by the
5 contour of the slot in which its associated cam follower then moves, said spring means applying a grip to said product.